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..MATION ON INTERNATIONAL GEOPHYSICAL COOPERATION --

SOVIET-BLOC ACTIVITIES

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I. ROCKETS AND ARTIFICIAL EARTH SATELLITES

The Problems of Interplanetary Travel Discussed

The time is approaching, writes N. Varvarov, when flights will be made around Mars and Venus and artificial Venus and Mars satellites will be a reality. A later step will be actual rocket landings on the surface of those two planets. These rockets will carry research apparatus and mobile automatic stations. These "wandering robots" will report back to Earth by radio and television.

The author then discusses the character of space flights to Mars -- along a trajectory of 586 million kilometers in 259 days, and to Venus -- along a path of 401 million kilometers in 146 days.

The first stage in the flight will be the takeoff from Earth and the attainment of the necessary acceleration -- a stage which can last but a few dozen minutes. The motors will then be switched off and the second stage of flight will begin. In this section of the flight, more than 99% of the entire route, movement will be by inertia. The third stage begins when the spacecraft enters the field of attraction of the body to which it is travelling. The motors will then be activated and the braking process will begin. This final pre-landing stage may last from several dozen minutes to several hours. None of this can be achieved except by carrying rocket motors and rocket fuel aboard for use in correcting the trajectory in midflight.

Flight can be undertaken only at the most rigidly predetermined times. The slightest error in calculation can lead to tragic consequences -- the ship may become lost in space forever. In the case examined, no return from Mars could be undertaken until 455 days had elapsed on that planet (or 470 days, in the case of Venus). Thus, a round trip to Venus would require about 2 years, and to Mars -- approximately 3 years.

Favorable conditions for a flight to Mars will occur in September-October of this year and November-December 1962. The next favorable period for a flight to Venus will occur in the middle of January 1962, and thereafter -- in August 1962.

One of the notable peculiarities of space flight is that even a small increase in the velocity of flight leads to a considerable decrease in the duration of flight.

However, the power sources presently available do not make such interplanetary flights possible. But the solution, in turn, is to create intermediary fueling stations.

The ideal shape for a spaceship is a sphere, because it is the shape which combines minimum surface with maximum volume.

Future interplanetary expeditions will not consist of a single spaceship, but two at the very least. The author reminds us that the interplanetary travellers face more hazards than did Columbus and Magellan; only one ship returned of the three Columbus had, whereas all but one of Magellan's five vessels were lost.

After listing these difficulties, Varvarov concludes as follows: "There is no question that these difficulties can be overcome provided the material and intellectual resources of the peoples of different countries be joined together. Therefore, the sooner the arms race is ended, the sooner the world replaces the sword with the plowshare, the sooner we will solve the many problems of vital importance for humanity, including flights to the planets of our Sun and those of other stars." ("To Unknown Worlds," by N. Varvarov, Ekonomicheskaya Gazeta, 9 October 1960, p. 3)

"Priroda" Article Fails to Shed Further Light on Spaceship Flight

A rather brief 300-word article in a recent issue of Priroda describes the return to Earth of Belka and Strelka and the other living organisms aboard the second Soviet spaceship. It fails to contribute any detail of information not earlier reported. ("Automatic Instruments of High Accuracy and Dependability," by M. S. Yarov-Yarovoy, State Astronomical Institute im. P. K. Shternberg, Priroda, No. 9, 1960, p. 5)

Rocket-Carrier of the Second Spaceship Continues its Motion

On 19 August 1960, when the second Soviet spaceship was put into orbit, many stations were engaged in its observation. The first reports came from Novosibirsk and Saratov; the spaceship was then observed by the Czech scientist Kersak and the German astronomers Nitschman and Pentsel. In the days that followed the motion of the ship was followed by many Soviet and Chinese stations, as well as by observers in Italy, Finland, Bulgaria and Yugoslavia.

As is well known, the spaceship and the living creatures carried aboard it, were returned to the Earth in response to a command transmitted from the Earth. The rocket-carrier continued to travel around the Earth. The results of observations have been sent to "Kosmos" and the Astronomical Council of the Academy of Sciences of the USSR. ("The Rocket-Carrier Has Continued its Motion," unsigned article, Priroda, No. 9, 1960, p. 9)

Isakov Predicts "Man in Space" in Near Future

P. K. Isakov, Chairman of the Committee on Space Medicine of the Section on Astronautics of the Aviation Federation of the USSR, in the September 1960 issue of Priroda, comments rather sketchily on the implications of the return of the passengers from the second Soviet spaceship. He appears to feel that there is no impediment to such a flight from the viewpoint of space medicine. As a specialist in that field his comments may be quite significant, but this article was probably written in August, before the biological specimens and animals had been fully studied. ("Man Will Fly into Space," by P. K. Isakov, Priroda, No. 9, 1960, pp. 4-5)

Academician Fesenkov Reviews the Significance of Spaceships in the Study of the Atmosphere

V. G. Fesenkov, writing in a recent issue of Priroda, considers that an observatory in space will be a reality within a reasonably short period of time. Initially, such an observatory will be maintained relatively close to the Earth. The manned vehicle will describe an elliptical or circular orbit around our planet at altitudes of 500 to 600 km and be controlled from the Earth. These flights, near the Earth, but beyond the limits of the atmosphere, will make it possible to undertake much research which is impossible or extremely difficult from the Earth's surface due to the interference of the atmosphere.

The author then describes the possibilities offered by a spaceship circling the Earth at an altitude of 500 km, in an approximately circular orbit, and inclined 65° to the plane of the equator.

For example, the author suggests that by photographing the sunset from such a height with an ordinary camera with a telescopic lens and a focal length of about one meter and through various filters, it would be possible to easily determine the vertical distribution of ozone over a wide range of latitudes.

Likewise, highly fruitful research could be conducted in the field of twilight phenomena. Photometric observations of the twilight could provide valuable data on the structure of the Earth's atmosphere up to altitudes of 150 km or more.

It would be interesting, states the author, to use a small spectrograph to record the emission spectrum of the ionosphere on the unilluminated side of the Earth and constantly record how the various emission lines change in dependence on the time various layers of the ionosphere are reached by the direct rays of the Sun.

Among the other phenomena which Fesenkov advocates be included in the observatory's research program is that of Zodiacal light; we have had only a limited view of this phenomenon and in several respects it remains virtually unstudied.

By ingenious adaptations to the spaceship and its equipment, Fesenkov suggests that the complex structure of the Sun's corona can be photographed in a manner to reveal information hitherto inaccessible.

Finally, telescopic observations of the Sun, planets and stars from aboard the spaceship will reveal much detail previously unseen due to the optical barrier imposed by the Earth's atmosphere. ("Spaceships and Astrophysics," by Academician V. G. Fesenkov, Priroda, No. 9, 1960, pp. 6-9)

Information on the Soviet Satellite Observation Stations

N. P. Slovokhotova, of the Astronomical Council of the Academy of Sciences of the USSR, reports that there are now about 90 optical stations and observatories in the USSR engaged in the observation of artificial earth satellites. These stations have special apparatus. Visual observations are made with the AT-1 astronomical telescope with an objective having a diameter of about 5 cm and with a field of vision of about 11°. Some stations photograph the satellites with "Kiyev" and "Zorkiy" cameras. Precise photographic observations are made with the special NAFA-3c/25 camera whose objective has a diameter of 10 cm and whose lens opening is 1/2.5. Such cameras are already in use at 29 stations.

Stations situated in the countries of people's democracy, and in a number of countries in Asia and Africa have received various kinds of apparatus for use in making satellite observations as a gift from the Academy of Sciences of the USSR.

In the case of the third Soviet satellite, over 25,000 observations have been received from Soviet stations and more than 14,000 from foreign sources. Up to 1 June 1960 a total of 4,000 observations of the fourth Soviet satellite have been received from Soviet stations, and 2,000 from abroad. In the latter case, the greatest number of observations have come from Finland and France. ("The Fourth Artificial Satellite in Flight," by N. P. Slovokhotova, Priroda, No. 9, 1960, p. 14)

Determination of the Coordinates of An Artificial Comet -- A Full Translation

The sodium cloud (artificial comet) formed by the second Soviet cosmic rocket was observed at the Mountain Observatory of the Astrophysical Institute on 12 September. Preliminary results of these observations have already been published (1). The present article gives the results of the determination of the position of the comet from photographs.

One photograph of the comet was made on the D. D. Maksutov meniscus astrograph (D = 500 mm; F = 1200 mm) on Ilford plates HP3+, OS-11 filter, observers -- D. A. Rozhkovskiy, M. G. Karimov, and A. V. Kurchakov. Three negatives of the comet were made by K. G. Dzhakusheva, V. S. Matyagin and M. A. Svechnikov with a "Comet-A" camera (D = 100 mm; F = 500 mm); a DN movie film and a weak orange filter were used.

To determine the precise coordinates of the subject we used two photographs from the Comet-A camera and a photograph from the meniscus astrograph; the comet appeared as a rather compact formation, convenient for measurements. We did not use the third negative of the Comet-A camera on which the subject has the form of a ring with a low density and with an inside opening with a diameter of ~6 mm.

Table 1 gives the coordinates of the instruments.

Table 1

Instrument	λ	φ	h
Comet-A	$5^h07^m49^s,76\pm0^s,04$	$+43°11'17'', 8\pm0'',7$	1450 m
Meniscus astrograph	5 07 49,76±0,04	+43 11 16,9±0,6	1450

Table 2 gives three positions of the comet. The first and third were determined from the negatives from the Comet-A, the second -- from the negative of the meniscus astrograph.

Measurements of the film were made by Ye. Ya. Bugoslavskaya at the State Institute of Astronomy im. P. K. Shternberg (GAISh) on a KIM-3 instrument. The locations of the comet were determined from three reference stars (BD -8°5421, -9°5512, -9°5537). Table 2, in the column showing the accuracy of measurements, gives the mean square error in the positions of the comet from 10 pointings, and for the stars -- from 4 pointings. The locations of two of the reference stars agreed with the positions in the catalog within the limits of 1" - 3". The moment and exposure of the first photograph were corrected by V. G. Kurt (GAISh) in accordance with the beginning of the flash of the sodium cloud arising after the beginning of the exposure.

The negative from the meniscus telescope was measured by V. S. Matyagin on a universal measuring telescope UIM-21. The position of the comet was determined by the A. N. Deych method by using the three reference stars (BD -9°5528, -9°5532, -9°5534). The AG catalog was used. Errors in measurements were derived by making three pointings on stars and on the subject.

It should be noted that in the future a distinct effort should be made to get photographs of a comet with the briefest exposure possible. This is because the principal inaccuracy in the determination of the coordinates arises due to some uncertainty in the moment to which the image pertains when there is a rapid change in the brightness of the subject and when its forward motion is quite rapid.

The reproductions of the negatives of the artificial comet shown in Figures 1-3 were made by using a Comet-A camera. They show the progressive development of this interesting phenomenon.

In the future the authors propose to process the photographs photometrically in which standardization and calibration will be applied.

Bibliography

(1) Kurchakov, A. V., Vestnik AN Kaz SSR, 1959, 10, 97.

Table 2

No. of photograph	Instrument	Time of photograph	Exposure	α 1950,0	δ 1950,0	Accuracy of measurements stars x	stars y	comet x	comet y
1	Comet-A	$18^h\ 50^m\ 11^s$	$1^m\ 21^s$	$20^h 36^m 00^s,24$	$-9^\circ 07' 12'',2$	$\pm 0'',8$	$\pm 0'',5$	$\pm 2'',2$	$\pm 1'',7$
2	Meniscus Astrograph	18 50 54	2 24	20 35 59,03	-9 07 13,7	$\pm 0,3$	$\pm 0,3$	$\pm 1,2$	$\pm 0,6$
3	Comet-A	18 52 07	2 00	20 35 58,35	-9 07 49,6	$\pm 0,6$	$\pm 0,3$	$\pm 7,0$	$\pm 6,0$

Table 2 (continued)

No. of photograph	
1	Images of stars -- elongated, image of comet -- intense, with dense nucleus in center.
2	Stars -- round, comet -- diffuse object, but denser in center.
3	Stars -- round, comet -- in the form of a faint ring of varying intensity.

("Determination of the Coordinates of an Artificial Comet," by Ye. Ya. Bugoslavskaya, K. G. Dzhakusheva, M. G. Karimov, A. V. Kurchakov, V. S. Matyagin, D. A. Rozhkovskiy and M. A. Svechnikov, Akademii Nauk Kazakhskoy SSR, Izvestiya Astrofizicheskogo Instituta, Vol. X, 1960, pp. 35-38)

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Space Goals Listed by Hungarian

A brief summary of a recent article by Erno Nagy, Secretary of the Hungarian Space Travel Society, is given below.

The first experiments with humans in the atmosphere are expected within a few months. Actual recovery of a man from space is expected within a year or two.

The development of the new Soviet propulsion rockets having a thrust capable of launching a three-ton lunik will make possible the establishment of space stations manned by a sizeable research staff, provided the proper procedures for assembling and transport are developed. However, this program still requires many years of work.

Experiments are in progress using atomic reactors as a source of heat energy. The goal is to develop a rocket propelled by atomic energy, but this is an unusually difficult problem and will require a very precise solution.

In the field of ion rockets, electrical propulsion units, which are experimental and unsuitable for space flight, are already being tested. As a result of the tests, propulsion units of this type may actually be tested and introduced for space flight in 10 or 15 years.

Photon rockets belong in the realm of science fiction for the time being.

The most immediate goals of space travel are: first, a safe return to Earth; second, a landing on the Moon after it has been thoroughly investigated by probes, and after rockets of the right dimensions have been constructed; third, the exploration of Mars and Venus, which are within the range of our present-day rockets. A trip to other planets would require an atomically propelled rocket. ("Three Triumphant Years," by Erno Nagy; Budapest, Technika, Vol. IV, No. 10, October 1960, p. 1, 10)

Artificial Earth Satellite Observations in Poland

An 8-page article describes the observations of artificial earth satellites conducted at IGY Station No. 157, Zegrze. The article contains many tables, charts, diagrams, and photos made in connection with these observations. ("Observations of Artificial Earth Satellites -- SSZ," by Mgr Engr Janusz Molski; Przeglad Geodezyjny, Warsaw, August 1960, pp. 273-280)

II. UPPER ATMOSPHERE

Soviet IGY Publication Reviewed

A recently received 39-page publication of the Soviet Academy of Sciences contains three significant articles on solar observations. The book, entitled "Solar Observations" ("Nablyudeniya Solntsa") carries the imprint of the International Geophysical Year. A total of 1,000 copies were printed. There are three articles, as follows:

(1) The first article, the longest, is entitled "Solar Observations." Its author is R. S. Gnevysheva. It covers pages 3-24. The author provides the following abstract:

"In the Soviet Union the Solar Service was organized in 1932 under the auspices of the Solar Commission of the Astronomical Council of the Academy of Sciences of the USSR. Detailed directions are given by: the Crimean Astrophysical Observatory (observations of the chromosphere on the solar disk, measurements of the magnetic fields of sunspots), the Kislovodsk Station of the Pulkovo Observatory (observations of the photosphere, prominences and corona) and the Gorkiy Scientific Radio-Physical Institute (solar radio emission).

"In connection with the IGY the observatories taking part in the Solar Service received additional equipment. This made it possible to attain more uniform observations and reductions.

"The article contains a description of the standard equipment for observations of the photosphere, chromosphere and corona used at the Soviet observatories and the forms of publication. Besides, a brief description of the nonstandard equipment used for solar observations is given."

It would be a serious error not to exploit this article, one of the most informative articles on IGY solar research to be published. It describes the Soviet solar program and provides abundant data on organization, equipment, observatories and personalities. It lists the principal Soviet observatories engaged in this research; Figure 1 is a map showing the distribution of these stations. Still more important is a thorough listing of the instruments used, with their principal characteristics. There are high-quality photographs of many of these instruments. There are descriptions of the stations in the Soviet Sun Service, with data probably unavailable elsewhere, at least not in such concise form. An appendix lists 14 observatories and indicates the standard equipment used at each.

This invaluable document merits translation in full. It is by far the most authoritative and definitive paper on the subject matter covered.

(2) E. A. Gurtovenko, in an article extending from pages 25 through 35, writes on the subject: "Some Results of Observations with the AFR-2 Telescope." The article is summarized by the author as follows:

"This article gives the results of the study of certain characteristics of the chromospheric telescope AFR-2 -- a new apparatus used in accordance with the IGY program at a number of observatories in the USSR.

"The study of diffuse light in the apparatus is described. The changes of the reading of the thermometer with an interferential-polarization filter during changes in external temperature is described. A brief account of the method of spectrophotometry of chromospheric details when using an interferential-polarization filter with the AFR-2 telescope follows. The article describes certain practical aspects of this kind of spectrophotomctry."

(3) The final article, by M. N. Gnevyshev, on pages 36-39, is entitled "Techniques and Methods of Coronal Observations." The author supplies the following abstract:

"This paper points out that all coronal stations observe the Sun's corona by different methods. It is therefore impossible to obtain a continuous common series of coronal data.

"The method now used at the Kislovodsk station of Pulkovo Observatory is used as a basis for a discussion of the procedures used for observations and measurements of coronal lines and subsequent reductions."

("Solar Observations," edited by E. R. Mustel', Publishing House of the Academy of Sciences of the USSR, Moscow, 1959, 39 pages)

Abstracts of Articles from the "Izvestiya" of the Astrophysical Institute of the Kazakh Academy of Sciences

The most recently received issue of the "Izvestiya" of the Astrophysical Institute of the Kazakh Academy of Sciences contains five articles of interest to scientists engaged in the study of the physics of the upper atmosphere.

(1) "Investigation of the Spectrum of the Night Sky in the Region of Wave Lengths 6200-6600 Å," by R. Kh. Gaynullina and Z. V. Karyagina, pp. 52-63.

This article gives some results of observations of airglow emissions in the red region of the spectrum ($\lambda\lambda$ 6200-6600 ÅÅ) at Alma-Ata.

It was found that most of the emissions in this region of the spectrum are due to (9-3) and (6-1) bands of OH.

The intensities of the emission lines of OI, H_α and those of the vibrational-rotational bands of OH are obtained in absolute units (quantum $cm^{-2} \cdot sec^{-1} \cdot sterad^{-1}$) for 6 observational days, and for two other days in relative units only.

The temperature of the excitation of OH molecules is determined according to the distribution of intensities within the rotational components of the OH spectrum.

The average temperature obtained within the eight days of observations is equal to:

$$T = 258^\circ \pm 4^\circ \text{ K.}$$

(2) "Some Relationships in the Phenomenon of Polarization of the Sky," by Ye. V. Pyaskovskaya-Fesenkova, pp. 64-70.

The brightness and polarization of the day sky were observed by the author during August 1956 along the almucantar of the Sun at the Mountain Astrophysical Observatory near Alma-Ata on the slopes of the Ala-Tau Mountains. It is to be noted that the polarization degree as determined on the same angular distance from the Sun above the mountains and above the plain is substantially the same for the period of observations.

It was discovered that in some cases, but not in all, that the influence of aerosols on the polarization curve produces for all angles of scattering the same depression of the well-known Rayleigh values calculated without consideration of the effect of molecular anisotropy. This proportionality was also observed in one case of a very turbid atmosphere with a coefficient of transparency equal to 0.57.

The scattered luminous flux $\mu(\vartheta)$, as determined from the brightness of the day sky, was divided into two parts: one in natural light $\mu'(\vartheta)$ and another in polarized light $\mu''(\vartheta)$.

The two can be represented linearly for $\vartheta = 90^{\circ}$ in function of the coefficient of transparency p.

Approximately we have:

$$\begin{array}{ll} \text{if } p > 0.79 \text{ then} & \mu' < \mu'' \\ p = 0.79 & \mu' = \mu'' \\ p < 0.79 & \mu' > \mu'' \end{array}$$

(3) "Measurement of the Indicatrices of Scattering of Light in the Near-Surface Layer in Two Parts of the Spectrum," by T. P. Toropova, pp. 71-77.

The results of measurements of the indicatrices of scattering in the bottom layer of the atmosphere are described for two wave lengths.

The observations were made at the Mountain Observatory of the Astrophysical Institute near Alma-Ata (the height above sea level = = 1,450 m).

The results of measurements of the indicatrices show that their asymmetry increases with the increase in wave length for some days. This result corresponds to Pyaskovskaya-Fesenkova's result for the indicatrices characterizing the clear day sky.

The measurements of the absolute indicatrices of scattering made it possible to estimate the role of atmospheric aerosols in scattering of light in the bottom layer of the atmosphere for two wave lengths.

(4) "Spectral Measurements of Polarization of the Day Sky in the Almucantar of the Sun," by P. N. Boyko, pp. 83-93.

During April-October 1959 the author made measurements of polarization of the day sky. The investigation of polarization was carried out with a spectroelectrophotometer which automatically recorded the spectrum for the angular distance of 90° from the sun and on the sun's almucantar. Polarization proved to be very stable if the coefficients of the transparency of the Earth's atmosphere were stable too.

Orientation of the plane of polarization nearly coincided with that calculated theoretically for scattering of the first order and was very stable all over the spectrum.

(5) "Observations of the Spectral Brightness of the Sky by the Photographic Method," by P. N. Boyko and V. M. Kazachevskiy, pp. 94-100.

The authors made measurements of the distribution of energy in the spectrum of the day sky. The measurements were made by the photographic method. The observations showed a minimum of energy near $\lambda = 430-440$ mμ.

Polish Article Describes New Equipment for Solar Observations

A 5-page article describes the new prisms for the telescope of a theodolite for aiming at the center of the sun. It contains more than 20 diagrams and sketches of the new prism device and the sightings and gives the results of experiments conducted. ("New Prisms for the Telescope of a Theodolite for Aiming at the Center of the Sun," by Dr. Waclaw Gradzki; Warsaw, Przeglad Geodezyjny, August 1960, pp. 281-286)

III. METEOROLOGY

Shuvatov Develops Family of Radio Analyzers Based on the Concept of the Automatic Weather Station

A recent issue of Ekonomicheskaya Gazeta carries a description of the work of L. P. Shuvatov, an outstanding Soviet inventor. His technical achievements are of interest to meteorologists, but they are also applicable to a wide range of other fields.

He developed an automatic radiometeorological station which is airdropped in inaccessible areas and is able to transmit data on air temperature and humidity, wind velocity, soil temperature, etc. The collected data is radioed to a receiving device where the information is recorded on graph paper.

Shuvatov has now applied for a patent for a multichannel system operating on a single subcarrier frequency. It is simpler and more dependable than his earlier instruments. All resulting data can now be processed automatically. The receiving unit now has an analog electronic unit which can easily be connected to an electronic computer.

The new general-purpose Shuvatov system is designed to record at a distance (1) physical data, (2) biological data, and (3) purely technical data. These data are subsequently processed by an automatic electronic analyzer. ("Shuvatov Radio Analyzers," by Vl. Pospelov, Ekonomicheskaya Gazeta, 30 October 1960, p. 3)

Storm Forecasting in Hungary

Work on thunderstorm forecasting being conducted in Hungary is described in an article by Dr. Laszlo Aujeszky, Candidate of Physical Sciences, Director of the Department of Weather Forecasting, National Meteorological Institute. Under this program the National Meteorological Institute is required to submit a daily report giving the following information on thunderstorms: probability of occurrence within the next 24 hours, area of occurrence, extent of storm, intensity, time of occurrence, expected amount of lightning, and the path of the storm.

Dr. Aujeszky writes that it is now possible to predict thunderstorms with an accuracy of about 90 percent but that this percentage should increase as more knowledge is gained about the atmosphere. ("Prediction of Thunderstorms," by Dr. Laszlo Aujeszky; Budapest, Villamossag, Vol. 8, No. 8-9, August-September 1960, pp. 261-264)

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IV. SEISMOLOGY

Hungarian Instruments Register Earthquake

On 22 October 1960, at 2018 hours, the instruments of the Seismological Institute (Foldrengesvizsgalo Intezet) of Budapest registered an earthquake at a distance of 400 kilometers. Minor tremors must have been perceptible to the population of some neighboring country. (Budapest, Nepszabadsag, 25 October 1960, p. 10)

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V. ARCTIC AND ANTARCTIC

Soviet Trek to South Pole Described by Expedition Leader

The Soviet sledge-tractor trek to the South Pole in December 1959 has been reported briefly on previous occasions, but it has now been described in great detail in the journal Priroda by the expedition leader, A. G. Dralkin. Part I appears in issue No. 9, 1960, and Part II will appear in No. 10. The latter issue has not yet been received.

A paragraph-by-paragraph check of this article reveals no significant data not already available in Information on International Geophysical Cooperation during the past year. ("To the South Pole," by A. G. Dralkin, Priroda, No. 9, 1960, pp. 48-55)

June in Antarctica

It is severe winter in Antarctica. In June the air temperature at Mirnyy varied from -6° to -32.6°; at Vostok station -- from -48.3° to -81.1°; at Lazarev station -- from -10.3° to -40.8°. The polar night prevails at the stations of Lazarev and Vostok.

On 29 June Mirnyy experienced the severest winds of hurricane force ever observed by the Soviet expeditions in the region of the Pravda coast. Wind velocity at the surface attained 52 m/sec. This violent wind was caused by a cyclone caused by the intrusion of tropical air far to the south. When the low pressure area approached the continent the warm tropical air interacted with Antarctic air. At this time the air temperature rose sharply at all stations. Thus, at Vostok station in the interior the temperature rose by more than 30° between 28 and 29 June. At the portable station Pobeda, situated on an ice island to the north of the Shackleton Glacier, a temperature of +1° was recorded on 30 June. This is unprecedented for this season.

Regular scientific research is continuing at all Soviet Antarctic stations. Meteorological and aerological observations are made under all weather conditions. Radiosondes are released at wind velocities greater than 30 m/sec. The geological-geographical detachment of the expedition is engaged in the office processing of data collected during the summer in Queen Maud Land.

Despite the unfavorable weather, marine ice was reconnoitered from the air on three occasions. A giant iceberg 53 km long and 2 to 4 km wide was discovered to the north of Drigal'skiy Island.

At the beginning of June, in the heart of winter, the Emperor penguins in the colonies near Mirnyy completed the laying of their eggs. These colonies number about 9,700 birds. ("News from the South Polar Continent," by N. A. Lepilova, Priroda, No. 9, 1960)

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